QUALITY ASSURANCE AND QUALITY CONTROL

Introduction

The Kansas Department of Health and Environment (KDHE) relies on environmental sampling data to support a multitude of environmental management, regulatory, and administrative decisions. Accordingly, Quality Assurance and Quality Control (QA/QC) planning is required by the Voluntary Cleanup and Property Redevelopment Program (VCPRP).

QA/QC planning involves more than taking samples by standard protocol and maintaining chain-of-custody forms. In general, the objective of the QA/QC planning process in the VCPRP context is to provide sufficient reliable information to KDHE to accurately assess a property and ultimately to reach a No Further Action determination. This means evaluating existing environmental data and deciding, prior to field investigation, what types and numbers of additional environmental samples are required to meet KDHE's decision-making needs.

Existing environmental data and data collected during the Voluntary Cleanup Investigation (VCI), along with risk factors, will be used by KDHE to determine if remediation is required at a property. If remediation is indicated, additional sampling data may be required to develop a proposal for remediation. Finally, environmental sampling will be required to verify that remediation has been successful before a No Further Action determination can be issued. An additional goal of QA/QC planning is to efficiently provide the data necessary for appropriate decision making at the most reasonable cost to the voluntary party. Therefore, thorough QA/QC planning and documentation in the form of a quality assurance project plan (QAPP) will be required for all work plans and reports submitted to the VCPRP.

Media Sampling Considerations

Environmental investigations typically require sampling of soil, water, and/or air media to demonstrate whether or not hazardous substances are present at a property, to determine whether they have migrated from their original locations, and to evaluate risk posed to human health and the environment. Air, water, and soil are heterogenous media and the distribution of contaminants is typically heterogenous in these media. Normally, environmental sampling strategies involve biased sampling, also known as non-random or judgmental sampling. Biased sampling consists of using knowledge of the property and visual observations to guide the selection of sample types and locations. Sampling choices should be based on the need to support KDHE's decision-making process.

QAPP development involves determining what kinds of releases may have occurred at a property so a sampling program may be designed to obtain data for determining the risk to human health and the environment. To minimize error, all sampling should follow applicable and appropriate Standard Operating Procedure (SOP) protocols. The importance of the QAPP in ensuring that location and

media meet appropriate methodologies, and appropriate sampling equipment, containers, and preservatives are employed cannot be overemphasized. Proper documentation of field procedures is an important part of a QA/QC program. Failure to provide documentation of the environmental sampling process can limit the value and credibility of analytical data. The QAPP should also contain appropriate quality checks on the sampling procedure including, but not limited to, field duplicates, field blanks, trip blanks, spiked samples, and field rinsate samples.

The following sampling goals should be considered during the QA/QC planning process: 1) sampling should characterize the property and any contamination sources; 2) known releases should be sampled, as should areas of observed contamination; and 3) levels of contamination at specific targets, such as property boundaries, drinking water sources, or the location of human or environmental targets (residences, wetlands, etc.) should be measured so that appropriate risk factors may be determined.

Approved environmental laboratories (Section 12) will have acceptable QA/QC procedures in place. It is the applicant or their consultant, however, that must request the analyses that will meet the objectives for the project. Quantification limits must equal or be less than the target cleanup levels (Tier 2 - Risk-based Summary Table defined in Section 14) or established MCLs for drinking water.

The Quality Assurance Project Plan

Qualified environmental consultants (Section 11) should have a standard QAPP in place and all of the consultant's employees should be trained in the implementation of that plan. This off-the-shelf QAPP may be modified as appropriate for each individual property and included in work plans submitted to KDHE. The QAPP should include all field sampling and chain-of-custody SOPs. It should also identify key personnel and organizations responsible for each step in the environmental sampling and analysis process. Each project-specific QAPP will include the analytical procedures and QA/QC programs for the laboratories to which samples will be submitted.

Each investigation report submitted to KDHE will contain a section describing how laboratory results were validated to determine if the QA/QC objectives were achieved. This should include a description of the numbers and types of QA/QC samples such as duplicates, trip blanks, field blanks, rinsate samples, and field spikes or standard samples run. If field analysis is carried out, full documentation of calibration, standards run, and other QA/QC SOPs for validating in-field analyses must be included in the report. Additionally, environmental data collected must be assessed with regard to meeting KDHE's decision-making needs.

The United States Environmental Protection Agency (EPA) has published a number of guidance documents which describe QA/QC procedures appropriate for field investigations of environmental properties.

Reporting Requirements

Consultants should follow reporting requirements outlined in this guidance document. This will expedite KDHE's response and decision making. Reports should also be carefully proofed before submission for both language and technical information to avoid errors. Data tables should be checked for consistency and accuracy against original analytical reports. Evaluation of risk factors should be supported by the property-specific data contained in the report. Ambiguous or conflicting statements and references should be eliminated. Reports should be written in plain technical language so that any qualified technical person may understand the report contents, even though they may be unfamiliar with the property. KDHE approval of remediation plans or the issuance of No Further Action determinations under the VCPRP will be based on the property-specific environmental data submitted by the voluntary parties and their consultants; as a result, clarity of presentation and the inclusion of appropriate QA/QC are vital components of the VCPRP process.

Expediting the VCPRP Process

Voluntary parties and consultants can assist KDHE in expediting property evaluation and remediation by submitting technically correct and quality-checked applications, reports, and data in a timely manner. Since the goal of the VCPRP is to return contaminated property to productive use as soon as possible, KDHE's decision-making process will be enhanced by submittal of quality work directed toward providing KDHE with the data needed for evaluating risks to human health and the environment. The VCPRP contains time constraints on both the applicant and KDHE at certain steps in the process. These time frames should be considered by all parties as maximum allowable time for decisions, and properties can progress through the VCPRP process much more quickly with quality submittals and consequent rapid review and decision-making by KDHE.